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NUTRITION AND NATIONAL DEFENSE

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Our country is now engaged in a great activity of national defense. We are building a new fleet, erecting factories to make airplanes and the munitions of war. We are training thousands of young men to be soldiers and defenders. All these things are being done that we may defend if necessary our way of living, our democracy, against those nations and those world forces which may attack us.

Defense under modern conditions means more than battleships, tanks, planes, and soldiers. Modern wars are wars not between armies, but between whole populations. Therefore, true defense is "total defense" in which every man, woman, and child in the Nation is involved. All must be able to give the best that their muscles and brains can contribute to the defense of our country and our values in life.

Many Are Undernourished

Scientific studies now indicate that there are, roughly speaking, 40 or 45 million people who are improperly nourished and their efficiency as human beings is accordingly impaired. Many of these people do not exhibit clinical symptoms of malnutrition but the effects of the hidden hunger for vitamins, minerals, and other elements of the diet are there just the same. Therefore, a great problem in national defense lies in correcting as soon as possible the diets of those who are unsatisfactorily nourished.

Human nutrition is represented in the National Advisory Defense Commission by Miss Harriet M. Elliott, Commissioner in charge of the Consumer Protection Division. A section has been set up dealing with health and welfare, under the leadership of Miss Gay B. Shepperson. During the World War of 20 years ago there was a motto in every household that food would win the war. Miss Elliott said shortly after accepting her present responsibilities, "Hungry and ill-nourished people are a liability in a democracy."

The emphasis in this defense program is not on food conservation. The Nation has plenty of nutritious food. Now the significant thing is proper nourishment of the entire population. Improvement in the nutritional status of the 40 or 45 million ill-nourished people should begin as soon as possible. A coordinated cooperative effort should be made on the part of all educational, scientific, technical, and welfare groups to bring about a national condition whereby all people are properly fed.

Nutrition Work Progressing

There has been, truly speaking, a revolution in the science of nutrition which is just as great as the revolution in other sciences. We now have a true scientific basis for understanding and setting dietary standards. We are fortunate in that there are so many competently trained in the field of food and nutrition widely disseminated throughout the Nation. It is fortunate that educational work has been carried on in so many fields about foods, their selection, and their relative importance in the normal diet. The educational campaign for better understanding of the nutritional value of dairy products is an example of a type of activity which will have a lasting value. These campaigns and this educational work will now bear fruit.

Mr. Wilson

We must marshal all forces and endeavor to work out steps whereby the Nation will become nutrition conscious and regard the malnutrition of the 45 million people as a disease among us which we can eradicate. We must think of malnutrition as a national problem the same as unemployment, health, education, etc. It is going to be possible, I think, to organize the forces and to be actuated by a common desire so as to go forward and greatly change this situation of malnutrition within a relatively short time. To do this everyone must know more about the protective foods and ways and means must be found whereby all of our people will be able, first of all, to have good diets. Not until then will they be able to do their full share toward national total defense.

Glances AT NUTRITION RESEARCH

Research studies such as those reported below increase our knowledge of the factors influencing good nutrition. This knowledge must be given to the public in a way it will understand. Techniques for imparting health education are needed.

Calcium and Lactose—Calcium retention is increased by the presence of lactose (milk sugar) in the diet. Five boys, aged 5 to 7 years, served as subjects in an experiment to test the effect of the lactose. They were given a basal diet low in calcium, plus calcium salts, during the control period; an amount of lactose equivalent to that in one quart of milk was added during the experimental period. The average increase in calcium retention was 33.5% during the lactose period.

—J. Nutrition 20:467 (Nov.) 1940.

Riboflavin — Meals lacking in milk, eggs, and green vegetables, all important sources of riboflavin (vitamin G), have been found to produce an eye disease in humans. The most common symptoms are sensitivity to light and dimness of vision. All of the symptoms disappear promptly, some within 48 hours, when doses of riboflavin are given. The possible relation of riboflavin to cataract is now being studied.

—J. Amer. Med. Assn. 114:2437 (June 22) 1940.

Utilization of Calcium — Milk calcium is more efficiently used by the body than vegetable calcium. This has been shown by an experiment on white rats in which milk, carrots, lettuce, and green string beans were tested. It was found that the calcium of these vegetables was 85, 80, and 74%, respectively, as available as the calcium of milk. Moreover, the constituents of vegetables tend to decrease the utilization of the calcium of other foods with which they are fed. Steam cooking of carrots and commercial canning of green string beans do not have an appreciable effect on the value of these vegetables as sources of calcium.

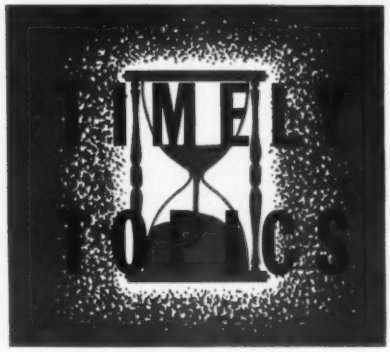
In a second study, made on six preschool boys, the value of pure calcium salts as supplements to the diet was tested. The average utilization of the calcium from milk and from calcium salts was almost identical, and the investigators therefore conclude that the calcium salts are not superior to milk as a source of calcium for children.

—J. Nutrition 20:279 (Sept.) 1940.

Teeth and Health—A study has been made of the dental conditions of children in relation to their previous history and their general health and nutrition. Results of the study indicate that a sound oral condition is the accompaniment of a sound body.

Most of the children who showed extensive dental decay or malformations were found to have evidence of old rickets and other indications of poor nutrition, past or present. Only one third of these children consumed more than 1½ pints of milk daily, and half of them consumed less than a pint. Fruits and vegetables were eaten in insufficient amounts.

—Am. J. Dis. Child. 60:283 (Aug.) 1940.



There are 36 million children under 16 in the United States, two million fewer than there were in 1930. In 1950 there will be still fewer than there are now. For a time at least a continued shrinkage in the child population can be anticipated. Perhaps because of this trend, we are in a better position than ever before to undertake to improve the quality of life for all children throughout the country.

To determine the effectiveness of health exhibits, and the public's interest in various types of exhibits, a "Visitor Reaction Study" was made in the Medicine and Public Health Building at the New York World's Fair. One or more tests were given to more than 50,000 visitors. Results indicated that the museum of health is an effective instrument for mass education for health.

At the recent annual convention of the American Dietetic Association, honorary membership was awarded to Dr. Mary Swartz Rose, in recognition of her leadership in the field of nutrition. Dr. Rose has been a pioneer in nutrition research and nutrition teaching, and is the author of several books used as texts wherever nutrition is studied. She is soon to retire from her teaching career at Teachers College, Columbia University.

A PLAN FOR RELATING FOOD TO SAFETY

By Miss Mary May Wyman
Supervisor of Health and Safety Education
Louisville (Kentucky) Public Schools

Health and Safety go together. One might argue as to which is the more important in a child's life only to admit in the end, that health and safety go hand in hand. Nutrition forms a very important part of health teaching. We believe some very important safety considerations about food are valuable for children in the fifth and sixth grades.

A group began these discussions with "There Is Safety in Sound Bodies." They read the book several times, first to find out if the book proved its title, next to list new ideas, to see if there were points with which they did not agree because of their experiences, and finally to list topics about which they wanted to know more. They were intrigued with the idea that safety and sound bodies are related. The fact that personal safety is dependent on vision, hearing, and quick thinking opened new concepts, for such relationships reorganized ideas they had discussed for years. It summarized a school-life of safety teaching. As one boy remarked, "One way of saying it is, your food helps to make you safe."

The defense program in Louisville includes interesting expansion of the airport. One group of children decided they wanted to know more about the physical requirements for pilots. They planned a trip. There were discussions about the methods of transportation (a distance of ten miles), the expected behavior during the trip, points to be observed and questions to be asked at the airport. Letters were written, arrangements completed, and one lovely October day found the group at Bowman Field.

The arrival of one plane, and the departure of a second were observed. It so happened that a porter carried away from the arriving plane the uniform boxes containing the remnants of a meal, and loaded on the other plane the clean white boxes which were not placed in the pit with other baggage.

The guide told them about the meals served on planes. He explained how food is prepared and served. He gave them copies of menus, and showed them the kitchen of the restaurant at the airport. He patiently answered their questions about the precautions for the welfare of the passengers. He told of the careful physical examinations that pilots, stewards, cooks, etc. must undergo.

The next day brought a complete discussion of the trip. Dining in the air seemed the most fascinating of all activities of the passenger. It was not difficult to get the next desired reaction. "If the airplane companies take so much trouble about food when the passenger is only going to eat one meal on the trip, ought cities try to keep our food safe all the time?"

And then began an activity that was to lead to further activities. What is a safe food supply? Where do the people in Louisville get most of their food? What can make foods dangerous? Who makes food inspection? Why do they have meat inspectors and milk inspectors? How do these men inspect meat and milk? Is there any danger with other foods? How do you know a restaurant is a safe place to eat? Does food ever become unsafe in our homes? What ought we do at home to keep food safe? If eating the fish, helped the fisherman see in the dark, would the same thing be good for truck drivers?

The questions were asked over a period of weeks. Nor were they easy to answer. Very little material could be read. The health officer and his staff were sympathetic. Fortunately a few mothers had the time to take small groups to the health office to get the information.

The last question in the series was: "Is our food in our school lunchroom safe?" The manager seemed to welcome the inspections the children made to observe the preparation of food. She answered all questions, and displayed all techniques. In the end, the school lunchroom passed the inspection, and the children actually became better patrons.

As a summary to a unit which lasted about six weeks, the children returned to "There Is Safety in Sound Bodies." The contents meant more, and the class approved George's remark, "There is a lot of safety about foods."

MILK MEANS CALCIUM FOR STORAGE

By Dr. Ruth M. Leverton
Assistant Professor of Human Nutrition Research
The University of Nebraska

A study made on four college girls at the University of Nebraska has suggested an interesting relation between the adequacy of the diet and the iron requirement of young women. A diet was planned which furnished the optimum amounts of all the known dietary essentials except iron. Instead of the usual 12 or 15 mg. daily, it contained only 3.5 mg. of iron. The intake and loss of iron and the hemoglobin and red cell content of the blood were determined frequently for many months. During three, four, and five months on this low-iron diet the girls remained in good health and did not develop anemia as might have been expected.

The daily diet contained three cups of milk and a large serving of cottage cheese as well as butter and whipping cream, ad libitum. This meant a calcium intake of over a gram a day, excellent quality protein, and generous vitamin A.

Calcium Retained

At this level of calcium intake the girls were taking in more calcium than they were excreting and the net result was a retention of 30 to 300 milligrams daily.

After several months on this diet, meat was substituted for the milk. The substitution was made in such a way that the protein content of the diet was not changed—116 grams of lean beef containing the same amount of protein as the three cups of milk. Although the meat furnished more iron than the milk, the calcium content of the diet was reduced to 0.3 gram a day.

This reduction was soon reflected in the girls' calcium metabolism. Where-

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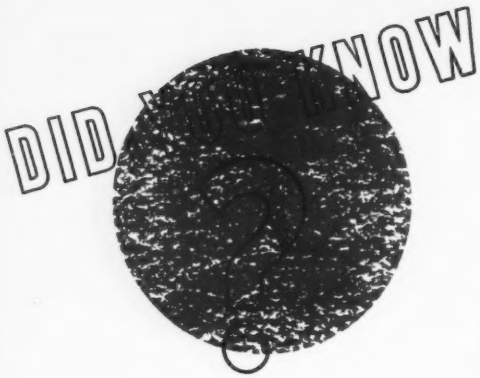


—that a high-pitched noise slows down the secretion of digestive juices and acid in the stomach more than a low-pitched noise of the same degree of loudness?

—that buried butter was once an indication of wealth? It is said that a tree was often planted over the butter in order to identify the place, and under these conditions the tree turned red.

—that cotton ice cream has been made? A special meal and extract from cotton is used as a base.

—that there are over 400 varieties of domestic and European cheese? Only experts are familiar with all of them.

—that the speed with which calcium eaten in food travels through the body can be determined with tagged atoms of radioactive calcium? The amount of this mineral needed for teeth and bones can also be determined by this method.

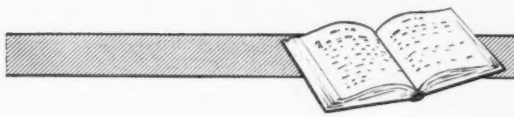
—that cream and milk from nearly a million cows are used each year in the making of ice cream?

—that although vitamins were unknown in biblical times, the ailments now attributed to vitamin lack were observed? Evidence of this is found in many passages in the Bible.

—that yearly butter consumption in Pacific Coast cities averages 22 pounds per capita, but in the South it is only eight pounds?

—that the first American patent on an ice cream freezer was issued in 1848?

THINGS YOU'LL LIKE TO READ



NUTRITION AND DEFENSE — M. L. Wilson. Address before the American Dietetic Association, New York, Oct. 21, 1940. Copies may be secured by writing the Agricultural Extension Service, U. S. Department of Agriculture, Washington, D. C.

Mr. Wilson's address gives a broad and somewhat detailed statement of the place of nutrition in total defense as now conceived.

SCHOOL LUNCHES USING FARM SURPLUSES — Rowena Schmidt Carpenter and Fanny Walker Yeatman. Miscellaneous Publication No. 408, U. S. Department of Agriculture, Washington, D. C., September 1940.

The contents of this new publication give simple directions for planning the school lunch, menu patterns with suggestions for type of equipment, methods of preparation, and a number of recipes in amounts for 12, 25, or 50 servings.

ESSENTIALS OF NUTRITION—Henry C. Sherman and Caroline Sherman Lanford. Macmillan Company, 1940. $3.50.

Especially designed for students who have had no previous training in chemistry or physiology, this text is very simply and clearly written. The material is presented in such a way that it is adaptable to teaching needs and interesting to the student.

VITAMINS AND THEIR OCCURRENCE IN FOODS—Hazel E. Munsell. Milbank Memorial Fund Quarterly, October 1940. Reprints available at 10¢ each from the Milbank Memorial Fund, 40 Wall Street, New York, N. Y.

Properties and food sources of the different vitamins are reviewed, and tables of vitamin values and human vitamin requirements are included in this comprehensive article.

PLAN FOR A MODERATE-COST GOOD DIET

Milk (to drink or in cooked food):
- 3 cups daily for each child under 2 years.
- 4 cups daily for each other child.
- 3 cups daily for each sedentary person.
- 1 quart daily for each expectant or nursing mother.
- 1 pint daily for each other adult.

Vegetables and fruits:
- Potatoes and sweetpotatoes — 10 or 11 servings a week.
- Mature, dry legumes and nuts—1 or 2 servings a week.
- Tomatoes and citrus fruits—5 or 6 servings a week.
- Leafy, green, and yellow vegetables —10 or 11 servings a week.
- Other vegetables and fruits—2 or 3 servings a day.

Eggs:
5 or 6 eggs a week for each person.

Lean meat, fish, poultry:
7 or 8 servings a week.

Other foods:
- Cereal—daily.
- Bread—at every meal.
- Dessert—once a day, sometimes twice.

—*Food and Life*, Yearbook of Agriculture 1939, U. S. Department of Agriculture, page 332.

MILK MEANS CALCIUM FOR STORAGE

(Continued from Page Seven)

as, on the diet containing over a gram a day, they were storing calcium, on the diet containing 0.3 gram they ceased to store it and in most instances excreted more calcium than they were taking daily. This meant a reduction of body stores of the mineral, a condition far from desirable in any individual and especially undesirable in young women because of future demands for reproduction and lactation.

When the girls in the study were returned to the milk-containing diet this loss of calcium ceased and storage again occurred.

Adequate Calcium Needed

The results of the study do not show superiority of one food over another when all dietary essentials are considered, but rather emphasize the need for a variety of foods. Especially do they show that a calcium intake of 0.3 gram daily is not sufficient to cover body needs and consequently on such an intake some calcium is used from the body stores while on an intake above a gram a day enough calcium is available to cover daily metabolic needs and to allow for storage.